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D10d: WaterTime National Context Report – Germany

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1 Introduction

The purpose of this context report is to describe the circumstances and conditions under which organisational decisions on drinking water and wastewater systems are taken in cities in Germany. It is not a report to explain in detail the natural characteristics and the organisational structure of the German water sector, which are described in detail elsewhere and are well accessible (e.g. UBA, Eurowater).

The main thrust is to describe in detail the legislative and administrative setup at national and regional level by which water suppliers and wastewater operators are regulated and influenced. In addition, specific actors and factors with a potential impact on decision-making in the urban water sector are called to attention. Such actors and factors are deemed to be of highest relevance to decisions on urban water systems since they potentially exert more influence than the legal framework. The roles of formal as well as informal public participation mechanisms on decision-making are described in a separate chapter.

The author would like to thank Nikolaus Geiler, BBU, Freiburg, for acting as peer reviewer and providing comments on an earlier version. Any faults remaining are entirely the responsibility of the author.[1]

2 Country Background

Germany with a population of 82.44 million is the most populous member state of the European Union, located between North Sea and the Baltic Sea in the North and the Alps in the South. The Eastern and Western borders are roughly following the rivers Rhine and Odra, respectively. In terms of land area (357,023 square kms), it is second in the EU to France, with an average population density of 231 inhabitants per km². Despite a low birth rate, the number of inhabitants has remained roughly stable during the past years. Population numbers have been balanced mainly by large numbers of German nationals from the former Soviet Union returning to Germany, as well as other immigrants.

Table 1: Recent population development in Germany

Population of Germany (1000 inhabitants)			
	2000	2001	2002
Inhabitants by 31 Dec.	82 259,5	82 440,3	82 536,7
Nationality			
German nationals	74 992,0	75 122,1	75 188,7
Non-German nationals	7 267,6	7 318,2	7 348,0

Source: http://www.destatis.de/basis/d/bevoe/bevoetab4.htm (modified)

The country which had been split into two independent states in the events following World War II, was formally reunited in 1990, with the first all-German elections being held on 2nd October 1990. Legally, the five Länder in East Germany (together about 17 million inhabitants) declared their accession to the Federal Republic of (West) Germany, an option built into the (West) German constitution in 1949 and retained throughout the decades.

Since reunification, Germany consists of 16 administrative regions (Länder), three of which are city states (Hamburg, Bremen, Berlin). It is ruled by a two-chamber system, with the First Chamber, the Bundestag, being a directly elected parliament, and the Second Chamber, the Bundesrat, representing the Länder governments. The chancellor (Kanzler) is elected by the Bundestag, and forms the government by selecting ministers. Head of state is the president of the Federal Republic elected jointly by both Chambers (Bundestag and Bundesrat). Political power rests almost exclusively with the chancellor and his majority in the Bundestag. For important legislative changes, a consensus is required of both Chambers. Over much of the past 10 years, the Second Chamber has been controlled by opposition parties (who were in power in a majority of the Länder), and major legislative changes frequently blocked by opposing interests of government and opposition.

The German administrative system is relatively decentralised, with the Länder holding the responsibility for inter alia education (schools, universities), justice (police, courts), and also most issues concerning water. In these policy fields, the Länder also set their own law (within of course the bounds of the federal constitution as well as federal or EU framework legislation).

In terms of economy, Germany is one of the seven largest economies in the world (gross national product GDP 2002: EUR 2108.20 billion), i.e. a GDP per capita of EUR 25,600. Figures for 2003 indicate a slight (0.1 %) decrease of GDP.

Water Resources and Uses

Germany is relatively rich in water, with an average natural availability of water over the past 30 years of approximately 182 billion cubic metres. Natural scarcity locally exists mainly in some rain-shadow areas in Eastern Germany and in the Berlin area. The main source for drinking water is groundwater with 74.1 per cent (2001) (Statistisches Bundesamt, 2003), followed by surface water (20.7 per cent) and bank filtrate (5.2 per cent). Groundwater is the preferred source for drinking water, as it normally requires little treatment other than removal of natural iron and manganese. Surface water is used mainly under two circumstances: a) where natural groundwater is unavailable (as in parts of the Rhine-Ruhr region as a result of decades of coal mining) or b) where local geology or high pollution levels have led to groundwater contamination (e.g. parts of Baden-Württemberg in the South, Lower Saxony). Other regions unable to supply themselves with sufficient and uncontaminated local groundwater are relying on long-distance imports of groundwater (e.g. Munich, Stuttgart region, Lower Saxony, Saxony, Saxony-Anhalt, Frankfurt metropolitan area).

Drinking water quality is within the German and EU limit values almost everywhere. Exceptions are unexpected occurrences of groundwater contamination (with nitrates or pesticides from agriculture, but also from leaching industrial chemicals) or an occasional bacterial contamination of drinking water pipelines. It needs to be said however that the German water sector's excellent

quality record has only been possible by major and costly infrastructure changes to fight back ever rising contamination levels (deeper wells, long-distance transport, additional treatment). The political influence of the water sector proved too weak in the past twenty years to improve legislation in order to curb pollution which is still on the rise concerning groundwater, mainly due to agricultural activities. River quality on the other hand has seen a lot of improvement. Yet most rivers still have some way to go before achieving good water status under the Water Framework Directive. Lately, from the point of view of drinking water operators relying on river water or bank filtrate, river water quality has returned to the centre of attention with the detection of potential endocrine disruptors.

The demand for water in households in Germany has dropped from 6.5 billion m3 in 1991 to 5.5 m3 in 1998, mainly due to dramatically decreasing consumption in the former GDR upon introduction of water fees (water used to be free of charge to the citizens of the GDR). At the same time, water consumption is continually dropping also in the western Länder due to the introduction of water-saving appliances and washing-machines and a generally increasing water awareness in the population. Of the entire quantity supplied to households, 23 per cent were supplied to consumers directly without treatment (1998). 77 per cent had to be treated to meet the requirements of the Drinking Water Ordinance.

While 5.5 billion m^3 for domestic consumption require only two per cent of the natural annual availability, other uses are much more demanding. The largest shares is taken from the natural cycle for the cooling of thermal power plants (26.4 billion m^3 in 1998 compared to 28.7 billion m^3 in 1991), and for the manufacturing industry (8.9 billion m^3). If all uses are taken together, human activities make use of roughly one fourth of the long-term natural availability – but much more in years of drought.

4 Legal Framework of Water and Sewerage Services

4.1 The protection and use of rivers, lakes and groundwater in Germany

Until 1957, water law in Germany was dominated by legislation of the original pre-World War I states (such as the Prussian water law dated 7 April 1913). In 1957, a new framework law (Wasserhaushaltsgesetz WHG) was passed which gave the main legal powers over water to the federal states (Länder, formerly 11, since reunification 16). The role of the central government was limited to setting minimum standards for the quality of drinking water and to setting rules for and maintaining water transport on rivers and coastal waters. All other legislative and administrative powers were devolved to the state level. The federal states passed individual water laws and are responsible for controlling the use of water and water bodies as well as their quality. In setting water law, the federal states are merely bound by the rather general framework law WHG (and lately, the EU Water Framework Directive, see below).

The overarching principle of German water law is that water be treated as an integral element of the natural environment and a common public resource which is to be used and protected so as to prevent any unnecessary negative impacts on the wider common good (Article 1 a WHG). In terms of ownership, national waterways (the large rivers and artificial shipping canals) are owned by the central state, while all other waters (rivers, lakes) are owned by the adjacent municipality. However, ownership is not relevant under German water law because all water uses (e.g. abstraction, mining the river bed or banks, wastewater or rainwater disposal) are subject to approval by water

authorities. The responsible authority may be, depending on the size of the water body, at state (Länder) level, sub-regional level or the municipal water authority.

At the central level, the protection and use of waters are under the responsibility of the Environment Ministry (BMU). The most important task assigned to BMU is setting standards for wastewater disposal (by industries and public wastewater companies) and levies for wastewater disposal (however, the Länder need to approve of the federal decisions). Most importantly, BMU serves as negotiator in EU affairs, again with strong input and supervision by the Länder's water administrations. BMU is scientifically assisted by the Federal Environment Agency (UBA). Drinking water quality is governed by the federal drinking water ordinance (under the auspices of the health ministry) in accordance with the EU Drinking Water Directive. The health ministry is assisted in water matters by the Federal Environment Agency UBA. The federal transport ministry is responsible for the national and international waterways.

At the state (Länder) level, the state environmental ministries are responsible for the quality of natural waters and their use. The state environmental ministry and the regional water administrations issue permits for abstraction of water from rivers, lakes and groundwater and for the disposal of wastewater, to industries as well as to public water supply and sanitation companies.

In the past 20 years, EU legislation has been of increasing importance to the water sector in Germany. The EU drinking water directive setting common minimum standards for water intended for human consumption in 1980 was belatedly taken over in German law in 1989 (the delay was caused by a political hesitation to accept the new strict standards for nitrate and pesticides). The Urban Wastewater Directive came into effect in 1991 and resulted in very large investments in wastewater treatment facilities, most notably in East Germany with its low level of sewer connections and treatment. Also, the EU Environmental Impact Assessment Directive (1985) had an effect on water management in Germany in that it prescribes assessments also of all abstractions from natural waters.

The most important European legal act for the German water sector will be the implementation of the Water Framework Directive (WFD). However, major direct consequences for the water supply and sanitation sector are not foreseen. Both abstractions for public water supply and wastewater disposal by public sanitation companies are already governed by legislation at least as strict as the new EU provisions. As explained before, water authorities in Germany are organised along administrative boundaries which do not coincide with river basins as in the WFD. The responsible politicians opted not to restructure water administrations in the course of WFD implementation, but to try to organise river basin management within the existing administrative structures. This will involve integrating the work of a large number of otherwise independent water authorities.

4.2 Legislation governing the supply with drinking water

The German Constitution in its Article 28(2) prescribes that the responsibility for supplying drinking water rests with local authorities as part of their task to ensure the basic conditions for life. In that respect, municipalities in Germany are constitutionally granted a exceptionally high level of independence of other state authorities, namely the federal and regional governments. Corresponding rules have been established in the constitutions or water laws of all 16 individual federal States. The respective laws leave it to the local authorities to take on this task by themselves

or to outsource them to private-law companies. This freedom of choice has resulted in a large number of different organisational forms to be adopted to supply drinking water to households and industrial consumers (see chapter 5).

While water and wastewater enterprises mainly operate under extensive self-control mechanisms, each aspect of their activities is at the same time under the supervision of an intracate web of state authorities safeguarding that all legal requirements are fulfilled. For instance, the local health authority oversees drinking water quality. General operations are controlled by the municipal government and the elected municipal parliament who also determine water and wastewater fees, however within a rather narrow frame of regulations (see chapter 6). Environmental aspects are overseen by water authorities, either at local or at regional level depending on the size of abstractions and wastewater disposal. Finances are controlled not only at municipal level, but also by the ministries of the Interior of the Länder and their respective administrations (Regierungspräsidien) who are generally in charge of overseeing communal finances.

It should be emphasized however that many municipal water suppliers go beyond the legal minimum in terms of quality, leakage rates, environmental protection, reliability and stability of supply. The same is true for wastewater operators: many cities have installed additional wastewater treatment to achieve extra protection of rivers (for instance the river Isar in Munich which in spite of receiving wastewater is fit for bathing purposes).

An important legal element of the water sector is the solidarity principle. In order to cover the considerable costs for establishing, maintaining and upgrading a centralised water infrastructure, local authority by-laws prescribe that all households and enterprises are obliged to connect to the system in order to spread the cost evenly over all members of society (solidarity principle). The same is true for wastewater systems. Exemptions from this principle are only granted on the basis of unreasonable hardship (e.g. excessive connection cost).

Federal, state and municipal laws and administrative regulations concerning construction, operation and maintenance of water supply systems are supplemented and assisted by technical regulations developed by professional associations such as the “German Association on Gas and Water – DVGW” or the “German Institute for Standardisation – DIN”. These technical documents mainly define and document current best available technology in the water sector. Further, they define a wide spectrum of specific questions such as minimum standards for labour contracts and worker safety in water works, requirements for pipeline materials, or minimum qualifications of companies contracted to lay drinking water pipes.

The quality of drinking water is secured by the German Drinking Water Ordinance which is an implementation of the EU Drinking Water Directive. However, the German DWO goes beyond the EU legislation in prescribing that the ”concentrations of chemicals [...] should be kept as low as possible, avoiding excessive cost and taking account of best available technologies and the concrete circumstances of the case” (minimisation principle). The DWO also sets the rules for state monitoring of drinking water quality. The task of supervising drinking water quality rests with the Federal States and, at local authority level, the public health departments. They jointly supervise the control and quality assurance measures taken by the water suppliers themselves, but also undertake their own monitoring. The water supply companies are obliged to immediately notify the health authority when any limit value of the DWO is exceeded. In such cases, EU and German only tolerate continued supply from the contaminated source if a) the risk to public health is negligible, and b) a precautionary plan is drawn up to clean up that source of water. If a water supply company

is for some reason temporarily unable to guarantee a continued water supply of adequate quality and quantity, it is by law liable to provide water to the population by other means, e.g. by water tankers. Fortunately, such situations are occurring very rarely in Germany.

The use of rainwater collected on roofs by individual households has been a contentious issue in the latest revisions of the Drinking Water Ordinance in Germany. The professional associations representing water supply companies would have preferred a ban of rainwater utilisation in households (other than garden use). However, the use of rainwater for flushing toilets, washing and cleaning which has been embraced by many home owners to lower their water consumption, was finally approved.

4.3 Legislation governing the collection and treatment of wastewater

In terms of wastewater, the federal state – with the approval of the Länder – with its wastewater ordinances sets the minimum requirements for the discharge of wastewater into rivers and lakes, including specifics on maximum quantity, pollution prevention mechanisms and treatment technologies. These requirements are applicable both to industrial and municipal wastewater treatment. Further, with the wastewater charges act (Abwasserabgabengesetz), the federal state provides that charges must be paid whenever wastewater is discharged to a water body. The charge is collected by the Länder, and is strictly returned to the maintenance and protection of water bodies. The level of this effluent charge depends on the pollutant load, and is seen as creating an economic incentive towards improved wastewater treatment. Given the high level of wastewater treatment technology installed in Germany, water associations question that the wastewater charge will effectively lead to further improvements in treatment technology. They instead opt for an abolishment of the wastewater charge (VKU, 2003). Others believe that the wastewater charge should be regarded as an environmental tax for polluting rivers with treated wastewater (an element the EU Water Framework Directive invites Member States to apply), and that it should be retained.

In contrast to water supply systems which municipalities are free to run by themselves, amalgamate into cooperations with neighbouring municipalities, or to delegate to private companies, municipal options are much more limited in the wastewater sector. Legally, municipalities are not allowed to transfer responsibility for wastewater collection and treatment to private companies. While a change in the German water framework law (WHG) in 1996 did introduce in principle the possibility of such a transfer, the Länder have been reluctant to make the corresponding changes to their respective water legislations (only Baden-Württemberg, Saxony and Saxony-Anhalt have made part of the necessary changes). Länder legislation is what sets the rules for municipalities in this respect, so in effect, the situation is changing very slowly.

5 Institutional Framework of Water and Sewerage Services

The number of water supply companies in Germany is given as 6,655, with a totality of 17,849 water works (Statistisches Bundesamt, 1998). The South of Germany with its extensive rural areas is dominated by a large number of small water suppliers (in Bavaria on average less than 3,700 people are supplied per company) whereas the highly-industrialised West and North have a more centralised structure (e.g. North-Rhine-Westphalia with 28,000 people on average supplied per company). The city states of Berlin and Hamburg as well as all major cities are serviced by only one supply company each. The relatively large number of water supply companies in Germany is owed to the fact that many rural towns are enjoying excellent water resources which require very

little technology and finances to supply the local population. Hence, these towns are able to supply inexpensive, high quality drinking water and have every reason to continue organising their water supply locally.

Wastewater is collected and disposed of by approximately 8,000 entities, operating 10,273 wastewater treatment plants (Statistisches Bundesamt, 1998). It is noteworthy that in the Länder of the former GDR only 16 state water and wastewater operators (WAB) had been responsible until 1992 – however with deplorable results regarding drinking water quality and wastewater collection and treatment. With the introduction of the federal administrative system and the strengthening of the cities, this highly centralised structure has since been replaced by over 550 independent drinking water suppliers and 1,050 wastewater operators (Hansen, Herbke and Kraemer, 2003).

5.1 Organisational setup in the water supply sector

Municipalities are free to apply a relatively large number of organisational forms to drinking water supply. Table 2 shows the principle options:

Table 2: Organisational options for water supply operations

Organisational setup	Specifics
Municipal department (Regiebetrieb)	Operation by municipal authorities
Municipal utility (Eigenbetrieb)	Operation by municipal authority, but separate finances
Anstalt des öffentlichen Rechts (AöR)	Public law company with increased independence of the municipality, recent new legal form only in some Länder (see
Municipal company (Eigengesellschaft)	Legally private company, entirely owned by municipality
Joint company (Kooperationsmodell)	Legally private company, shared ownership of municipality and investor
Management and service contract (Betriebsführungsmodell)	Ownership of assets remains with municipality; transfer of operations to a private company; responsibility for supply rests with municipality
Full or partial privatisation	Sale of part or all of the assets to a private company

Cities with municipal departments directly responsible for water supply are now only a very small minority, the most common solution being the municipal utility. Statistics reveal, however, that municipal utilities are much more important in smaller towns and cities. By number, they make up almost half of those drinking water operators who officially register with the water suppliers' association BGW. In terms of water quantity, municipal utilities together supply less than a quarter. The next most relevant organisational setup is the municipal company, with a share of over 20 per cent of the drinking water supplied, and the joint public-private companies with about the same supply percentage. It should be noted, however, that these figures are based on incomplete BGW

statistics of about 25 per cent of water operators, and the percentage figures hence merely indicative (BGW-Wasserstatistik, 1999).

For over a century, water supply in Germany has been and continues to be one of the prime responsibilites of municipalities and municipal companies. Specific for Germany is the development of so-called Stadtwerke, municipal utilities for providing basic services such as water, electricity, gas and public transport. Stadtwerke are legally and financially independent companies which are usually 100 per cent owned by the municipality (a municipal company organised either as a shareholder company – AG – or a company with limited liability – GmbH). Direct political influence into every-day operations is limited to major strategic decisions (such as major investments, shifting to another water source, privatisation or other changes of ownership) and executed by a supervisory board in which the municipality holds the majority. In principle, a municipality can opt to sell shares of the Stadtwerke to private companies (gemischtwirtschaftliche Gesellschaften, joint mixed ownership companies). Since Stadtwerke are by law entities run for the common good and not for profit, in such cases a contractual arrangement has to be established to allow for limited profits to be made.

Many water supplies are run as supra-municipal units. To deal with exceptional external circumstances, some municipalities have merged their water operations into larger, supra-municipal units. The most prominent example of this is the case in the Ruhr Valley where groundwater is not available as a drinking water resource as a result of coal mining, and a regional infrastructure of reservoirs had to be established to secure an adequate supply of surface water to the municipalities in the region.

Until recently, all water supply companies in Germany were fully owned by the municipality or their supra-municipal mergers. Lately, a number of cities have opted to grant concessions to private operators (Rostock, Suez subsidiary) or to sell part of the company to private interests (Berlin, RWE, Vivendi). Under any circumstance however, the ultimate responsibility for water supply and sanitation remains with the municipality (by state law). In one case, a concession contract was annulled after a very short period (Potsdam).

Another strong trend in Germany is the part privatisation of entire Stadtwerke, i.e. the electricity, water, transport and gas services. Driven mainly by the liberalisation of the electricity and gas market, water services in numerous cities have thus come partially into private hands in the past five years. E.ON and its subsidiaries are holding considerable shares of a growing number of Stadtwerke, mostly minorities. The effect of this development on water service provision is difficult to assess. In most cases, operations are still run by the same management, and the influence of commercial pressures is unclear. However, this silent and undeclared takeover of parts of the German water supply sector leaves major question marks, not least because E.ON has repeatedly stated its intention to further expand into the water sector in Germany.

5.2 Organisational setup in the wastewater sector

The legal basis for sewerage services is somewhat different from the drinking water sector. Legally, municipalities are not allowed to shed their responsibility for the collection and safe disposal of wastewater to a non-public entity, at least not ultimately and permanently. Consequently, the vast majority of municipalities run their wastewater services as semi-independent municipal companies

(Eigenbetrieb), while in many smaller towns municipal departments are directly responsible for the collection and treatment of wastewater (Regiebetrieb). Where cities intend to merge their water and wastewater services into one joint company, this usually implies a change in the legal status of the wastewater operations.

The only feasible form of privatisation in the wastewater sector is a model applied lately in the city of Dresden. In a first step, by 1 January 2004, the city transferred all assets and the entire staff of the municipally-operated wastewater division to a newly founded, limited-liability company, Stadtentwässerung Dresden GmbH. Then, 49 per cent of this company were sold for € 165 million to Gelsenwasser GmbH who were chosen from several national and international competitors. The contract between city of Dresden and the new semi-private company stipulates that the company will operate the wastewater system for 25 years. The deal has however been challenged by Veolia Water Deutschland GmbH, the German subsidiary of French water company Veolia. Veolia Water had also competed to acquire 49 per cent of Stadtentwässerung Dresden, but its bid had not been allowed for formal reasons (Veolia Water, 2003).

6 Financing, water rates and sewerage charges

The production costs of water supply companies are roughly made up from the following ingredients: water transport, storage, pressurizing and local distribution make up 56 per cent of the costs, while abstraction, well-field protection and treatment account for a further 33 per cent, the remaining 11 per cent are administrative and miscellaneous costs (Mehlhorn, 2001). Alternatively, the total costs can also be specified as labour costs (30 to 35 per cent), depreciation of assets (20 to 25 per cent) energy and material costs (10 to 15 per cent), taxes and charges (5 to 20 per cent) and external services (10 to 15 per cent) (Hansen, Herbke und Kraemer, 2003). 80 to 90 per cent of the total costs are regarded as fixed costs, i.e. they occur independently of the actual quantity of water supplied.

In the wastewater sector with its expensive treatment facilities, 56 per cent of the total costs are assignable to depreciation of the treatment works and to interest. Labour costs add up to approximately 13 per cent, energy and material costs to 12 per cent. The costs for sludge disposal account for approximately 4 per cent, the wastewater charge for roughly 3 per cent of the total costs. Again, fixed costs are very high (75 to 85 per cent) (Gammelin, 2002).

6.1 Infrastructure investments in the water and wastewater sectors

A centralised water supply system involves an extensive infrastructure which needs to be constantly repaired, replaced and extended to safeguard continued high quality and reliability of drinking water to households. Water operators hence need to continuously invest substantial resources in the maintenance of their infrastructure. In Germany, the total sum invested by water suppliers in the infrastructure necessary for water abstraction, treatment, storage, transport and distribution amounted to € 28.6 billion between 1990 and 2000. Infrastructure investments during the year 2000 alone have been € 2.6 billion. The biggest share of these investments can be assigned to the maintenance of the piping system (61 per cent) (Hansen, Herbke and Kraemer, 2003).

The maintenance costs of sewer and wastewater treatment systems are even more substantial. Investment in the wastewater sector in 2001 was € 6.85 billion, of which approximately 68 per cent were required for the replacement of ageing and outdated sewage pipes. Investments have been stable over the years, but may have to be increased. A recent expert survey on the state of the German sewer system indicated that of the 446,000 kilometres of public sewers up to 17 per cent may be up for repair or replacement in the coming years. This would involve costs of approximately € 45 billion (based on an average unit cost of € 594/metre) (Berger et al., 2002).

In principle, as a result of the full cost recovery principle in German law, some way or another, all these investment costs have to be retrieved from the consumers. In contrast, in past decades, the extension of a centralised water supply and sewer systems was sometimes accelerated by public funds (mainly to improve the economic basis of rural areas). However, the maintenance and operation of the systems is now the exclusive responsibility of the local municipalities.

A temporal exception for a few years was the five Länder of former East Germany. Here, EU funds and other public funds were used to quickly improve the very low level of sanitation and wastewater treatment and the correspondingly deplorable state of the receiving rivers. In 1994, the share of public funds was some 14 per cent of investments in water and wastewater infrastructure in former East Germany, but has since steadily declined (Hansen, Herbke, and Kraemer, 2003).

6.2 Setting prices for water and wastewater services

The price setting mechanisms for water as well as wastewater services are regulated by specific Länder laws. By law (Municipal Charges Act, Kommunalabgabengesetz), water tariffs have to cover all running costs, include an adequate return on the capital invested in the works by the municipality and secure the substance of the infrastructure (full cost recovery). On the other hand, prices must not exceed the level necessary to cover costs. It is in this rather narrow context that municipalities and municipal companies negotiate water and wastewater tariffs.

About half of the water in Germany is supplied by entities which are formally classified as private companies (this includes municipal companies and Stadtwerke, most of which are fully owned by the municipality). These companies calculate water rates according to the rules of private law. Financial supervision of such water supply companies is done by the Federal Antitrust Agency, not the municipality itself. The agency oversees the mechanisms of price formation, and, at the request of the agency, water suppliers have to produce exhaustive data explaining the different elements which make up the final water price.

Water rates are usually composed of a (monthly, annual) base price and a charge per cubic metre of metered consumption. The average base price paid by consumers currently makes up 11.4 per cent of total water rates. Base price and volumetric charge combined should ensure full cost recovery. The same applies where a water supplier delivers water to its consumers from another water supplier (for instance a reservoir operator): in this case the receiving party has to pay the full costs incurred by the abstraction and transport of the water.

The continually decreasing water consumption in Germany has indirectly led to an increase in volumetric water rates because ever smaller quantities have to cover constantly high fixed costs of 80 to 85 per cent. When comparing German water prices with international figures, this water

saving effect has to be taken into account. Total household costs for an individual or a family seem the most sensible standard for such comparisons while merely looking at the volumetric charge per cubic metre is not a realistic measure of water price. It should be made clear that political decisions beyond the control of the water operators (see below) also increase water rates. The value of mere price comparisons in the water sector must be regarded as limited, as long as differences in service quality (reliability, quality, repair times, water losses etc.) aren't simultaneously assessed.

Water rate statistics for Germany in 2001 (Hansen, Herbke and Kraemer, 2003) indicate marked differences between Eastern (former GDR) and Western Länder, even more than ten years after re-unification. With € 172.40 per household (1.8 persons) and year for former East German Länder, drinking water was more than 20 per cent more expensive than in the West German Länder with € 138.76 per household and year.

During the past three years, water rates have been almost stable. Over the ten years before 2001, however, average water rates had been steadily increasing. The increase was only partly due to an increase in the price of the service. The introduction of groundwater taxes (see box below), exceptionally high investments in the former GDR, and the steadily decreasing water consumption are all factors which increase volumetric water rates. The average annual cost of drinking water for one person in Germany has gone up by about 35 per cent from € 58.65 in 1992 to € 79.42 in 2001 (Hansen, Hebke and Kraemer, 2003). However, regional differences in water rates are pronounced, with higher water rates reflecting the extra technical effort necessary to supply good water in water-scarce or polluted regions. Lowest water rates are hence found in small rural communities in Bavaria where the local water requires no treatment or even filtration.

Box 1: Additional price factor groundwater taxes

Most German Länder charge a fee of between 5 and 31 cents for each cubic metre of abstracted groundwater. In principle, this environmental tax is meant as a disincentive against excessive water use. Normally, one would expect that it should be reinvested in water protection programmes. However, some Länder (such as Hamburg) simply use the revenue to supplement the general budget. It is obvious that the tax raises the price for drinking water, and in some Länder, the groundwater tax makes up considerably more than 10 per cent of the water price paid by consumers.

Box 2: Additional price factor concession fees

Concession fees are another factor beyond the actual costs of the operation and maintenance of the system which may increase water tariffs. The water supplier pays a concession fee to the municipality which in turn grants the water supplier exclusive access to public grounds in order to lay pipes. The level of the fee depends on the size of the municipality, and varies between 10 and 18 per cent of turnover. In the city of Hamburg, for instance, a port city of 1.7 million inhabitants, the local water supplier pays an annual concession fee of € 28 million. It is important to note that the concession fee is only due if the water supplier makes a profit.

Specific factors complicate the setting of a just price for the disposal of wastewater. Wastewater quantities cannot be metered, nor is individual pollutant load measureable. Further, where combined sewers exist for wastewater and rainwater, the quantity of rainwater plays a role. Full cost recovery applies, and wastewater operators have to retrieve the money they spend on collecting and treating wastewater and rainwater and on maintaining and improving the infrastructure.

The most common solution is to charge wastewater by the quantity of drinking water consumed. This system cannot take account of differences in pollutant levels or the relative percentage of rainwater. More and more wastewater operators are separately charging for rainwater discharges to the sewer, and base their calculation on the area of sealed surfaces and roofs. By investing in local rainwater infiltration or in storage and use of rainwater, home-owners can however easily avoid this part of their wastewater bill. More and more consumers are separately charged for wastewater and rainwater, and are thus given a strong incentive for rainwater utilisation in households and gardens.

In contrast to water rates, wastewater charges are mostly volumetric charges. Only a small percentage of wastewater operators are charging a base price. It should be noted that in the case of new housing developments (or where existing buildings are connected to the sewer system), substantial connection fees apply. In rural, remote locations, amounts of several € 10,000 for sewer connections are not an exception. Many home-owners (and also some environmental organisations) believe that connecting such remote homes to central sewers is justified neither economically nor ecologically. They opt for decentralised solutions such as sedimentation tanks with adjacent reed beds.

Average wastewater charges in Germany per cubic metre have been € 2.18 in 2001 (Hansen, Herbke and Kraemer, 2003) which amounts to € 117 per person and year. Of this charge, about five per cent are due to the the charge paid by wastewater operators under the Effluent Charges Act (see chapter 4).

7 Specific factors in the national context

7.1 Municipal finances

By far the most relevant factor influencing decision-making in the urban water sector is the continued erosion of municipal finances over the past years. The underlying reason for this decline is firstly a general increase in public spending to cope with the costs of German reunification (transfers for infrastructure enhancement, for unemployed workers from the disintegrating East German industry, pensions etc.) These costs, while formally borne by the federal budget, have been passed on to regional and municipal budgets by lowering the share of Länder and municipalities in the relative distribution of tax revenues.

Secondly, tax revenues have decreased because of a steady slow-down in the German economy, aggravated by a most marked decrease in general consumption after the introduction of the €. As a result, business taxes (which are directly collected by the municipalities) have dropped considerably, while income taxes (which are collected by the federal system and redistributed to the three levels of federal state, Länder, and municipalities) showed a smaller decrease. In normal years, municipal income from business taxes and the municipal share of income taxes are roughly comparable in size. While the municipal share of income taxes has slightly decreased (0.9 % in

2002 over 2001), business taxes have dropped by 11.4 % in 2001 and a further 7.9 % in 2002. In total, municipal income from taxes dropped by 5.6 % in 2001 and by 3.2 % in 2002. Similar drops are predicted for the fiscal year 2003 (Karrenberg and Münstermann, 2003). The municipal share of the total tax revenue has dropped from 14 % in 1980 to 11.5 % today, which equals a decrease in tax income of more than € 11 billion annually.

In addition to decreasing income, municipal spending is on the increase, mainly because it is the responsibility of municipalities to support long-term unemployed people and to cover other social costs. Social expenditures have increased by 3 % in 2002, and an at least equally high figure is predicted for 2003.

The strategies employed to cope with the increasingly difficult financial situation exert strong pressures on decision-making in the urban water sector. In order to balance budgets, additional income is generated by selling public municipal property, mainly infrastructure such as gas, electricity and water, to private investors, either partially or entirely. Hence the increased political pressure to privatise public enterprises. The fact that almost all new private involvement in the German water sector is based on the (full or partial) sale of the asset (instead of a partnership with a privately-run, publicly-owned enterprise), indicates that financial pressures rather than the wish for improved operation have been driving these decisions.

Apart from postponing investments in maintenance of municipal buildings (town halls, schools etc.) and roads, most municipalities have increased their bank loans to cover social and employment costs. This increases rate payments, but also lowers the ability of a city to cope with unexpected expenses, for instance for sewer maintenance. The future costs for sewer and wastewater treatment maintenance and upgrading in Germany have been estimated by some researchers in excess of € 100 billion for the next 15 years. It should be noted that this figure is most likely much too high, and that much of the research has been financed by banks. Clearly, however, unforeseen expenditures of that magnitude would naturally overstrain any municipal budget. Many mayors are hence seeking to rid themselves of the responsibility for wastewater.

The role of the German water associations

Water suppliers and wastewater operators in Germany are politically represented by the Bundesverband der Gas- und Wasserwirtschaft (BGW), a federal lobby organisation speaking for both the water and the gas industry. Gas is a commercially much more important business than water and wastewater, and this is also reflected by the internal power structure in BGW.

BGW has over the years been a very active player in bringing about strict EU legislation on water protection. On the issue of privatisation of water supply systems, BGW is however more ambivalent. While the association usually positions itself strongly against EU deregulation and liberalisation efforts in the water sector, it does not take a clear stance for or against ongoing privatisation moves by German cities. This is partly to be explained by the fact that the privately-run water suppliers in Germany are BGW members as well. In addition, however, the influence of the gas interests within BGW (i.e. the energy industry, mainly RWE and E.ON) is not to be underestimated. After all, it is mainly E.ON and RWE who are interested when cities want to rid themselves of shares of their Stadtwerke. In the past, such (part) take-overs of Stadtwerke which usually combine electricity, gas, water, waste and transport, haven been sought by energy companies because of their electricity and gas activities. Lately, the large utilities seem to be developing a strategic interest in the water sector as well. When shares of Stadtwerke are sold, most often the water supply part is privatised as well. However, more and more cities realise the special

importance of keeping full control over their water supply system, and make the extra effort to transfer their water activities into a separate city-owned unit before the sale of Stadtwerke shares.

While BGW is not an active player pushing for private involvement, by being formally neutral, the association creates a political atmosphere rather favourable for such involvement. An independent water association, in contrast, would be much more likely to publicly highlight the chances and problems of such processes. The suggestion to found a separate association of public water suppliers and wastewater operators has been brought forward repeatedly by the executive director of Hamburger Wasserwerke, now the largest fully municipally-owned water supplier in Germany. However, while many public enterprises in the water sector are sympathetic to the idea, many feel that their political influence would rather diminish than increase. Some water suppliers critical of private involvement have however formed a loose cooperation with environment and development organisations called 'Unser Wasser' ('Our Water').

The association of local utilities (Verband kommunaler Unternehmen, VKU) who represent a large number of public water suppliers and wastewater operators, is more critical of private involvement in the water sector, and rejects the idea of full material privatisation. VKU is definitely the strongest partner for cities faced with private aspirations concerning their water or wastewater services. However, due to their large number of members, VKU need to internally balance the interests of utilities with a wide spectrum of organisational set-ups, including numerous private-public partnerships.

7.3 The political atmosphere on private involvement in the water sector

The German government over the past years has commissioned several studies on the possibility for deregulation and liberalisation of the water sector. The advice given by the different consultants reflects the differences within the government and the state authorities. While the Ministry of Economics' consultants suggested far-reaching changes to the legal system governing the water sector (Ewers et al., 2001), the Federal Bureau of the Environment warned against liberalisation moves on the basis of predicted negative effects concerning drinking water quality, reliability and environmental effects (Brackemann et al., 2000).

Banks, business consultants and investment brokers have become an ever more important factor in the water sector. With publications, input to the business press and advice to city mayors, they have created an atmosphere friendly to private sector involvement and even total commercial take-over of the water sector. Beyond shifting the public mood towards private involvement, banks also act as lenders and as facilitators of Stadtwerke take-overs. They hence are also direct actors (see chapter 8: Actors).

Publicly, voices clearly critical of private involvement in the water sector are mostly limited to citizens' organisations and churches (see under Chapter 8: Actors). What the public makes of this, how it positions itself on private sector involvement in the water sector, is difficult to assess. The published opinion, mainly in the business press, emphasises the virtues of private companies and that the financial pressures on municipalities are best to be solved by passing public assets (including water) on to the private sector. When it comes to direct public involvement in the decision-making process on water supplies, much more critical voices prevail: In all plebiscites on water system ownership, the vast majority preferred public companies (see chapter 9: Participation Mechanisms).

All in all, the difficult financial situation of municipalities is deemed to be by far the most important factor influencing the respective decisions. It seems however, that with increasing participation of citizens' organisations in the decision-making process, there is a shift to assessing alternative options to a sale of the assets.

Relevant actors, roles and characteristics

In principle, decision-making in the urban water sector is a straight-forward process in Germany. Depending on the legal and institutional set-up chosen for water supply or wastewater operations, the role of the different actors should be well defined. The more private-law elements have been chosen, the more decision-making power and freedom rests with the management of the company, and the less influence the municipal bodies will be able to exert. Typically, this is a situation with a municipal supervisory board which meets a few times a year, but leaves every-day operations and decisions to the directors. This is for instance the case in Stadtwerke and other municipal companies which are entirely owned by the municipality. The municipal supervisory board's most important task is to select the management.

While this principle seems clear and simple, reality shows that the effective power balance between municipal government (mayor, municipal parliament) and company management may be very different from place to place. The factors establishing that balance are often 'soft' and difficult to identify. Generally, a weak government (for instance, one with a shaky majority in parliament, or one about to be voted out of office) leaves more room for the company directors to make their influence felt. Likewise, good service and financial records strengthen the directors' role in the power balance. On the contrary, unsuccessful operations will lead to stricter municipal supervision.

Apart from these rather obvious interdependencies, there are a lot of less visible factors which define the respective weight of the different actors. An important one is the personal political clout of the persons involved. In some cities, directors of water supply companies have over the years acquired informal powers which go much beyond their formal legal role. In such cases, a director's factual and technical knowledge combined with convincing and well-presented arguments can open many options. The influence of such 'soft' factors on decision-making needs to be assessed on a case-by-case basis, and often will evade thorough analysis.

Of course, any decision taken on the urban water sector will need to comply with all legal rules and regulations. However, given the considerable independence granted to municipalities by the German Constitution, there aren't many substantial limitations to the disposability of water supply and wastewater operations (for limitations particularly on transferring wastewater activities to third parties, see chapter 4). However, if an interested party requests it, the respective Constitutional Court may assess the decision. This has happened in Berlin in 1999 before the sale of 49.9 per cent of water and wastewater operations to private companies.

One very important actor in decision-making on sales of assets is the federal Anti-Trust Agency which may intervene when it considers that a competitor is getting too much influence in a market and that competition is endangered. So far, this has not happened in the water sector directly, but Stadtwerke take-overs have been stopped on these grounds (e.g. Lübeck, 2003). In this case, the Anti-Trust Agency has overturned the city's decision to sell considerable shares of its Stadtwerke, including the water supply system. For the time being, all the services under that Stadtwerke will remain in municipal ownership. Likewise, the biggest ever sale of water sector shares in Germany

also came about in 2003 as a result of an Anti-Trust Agency ruling. Gelsenwasser, then a subsidiary of E.ON, had to be put to the market and was eventually bought up by a consortium of Stadtwerke Bochum and Stadtwerke Dortmund. Again, the reason for the forced sale was not excessive concentration in the water sector, but in the gas sector in which Gelsenwasser is also active.

Finally, decision-making always involves advisors, and the quality of the decision depends on the quality of the advice. Who a municipality or a water supply company ask when decisions on the future of the water supply or wastewater systems are coming up, is fully at their own disposition. Traditionally, advice was sought mostly from engineering companies on strategic questions such as the long-term reliability of the system. In the past ten years, business consultants and investment banks have developed pronounced activities to assist municipalities in water decisions. Part of the reason is that, in times of financial hardship, municipalities are putting stronger emphasis on cost-efficiency. The other reason is of course that banks and business consultants have their own active interest, for instance to organise mergers and privatisations. Secondly, many banks sell water industry shares as a safe and profitable investment in the future.

Another aspect highly relevant to decision-making in the water sector is labour relations. Employees have a fairly strong position under German law, and in larger companies are also represented in the management, sometimes also in the supervisory board. Employees can thus directly influence (though not block) the outcome of decision-making processes. Where trade unions are involved (this is normally the case in the water sector, with the services trade union ver.di as a lead union), employees' influence is even greater.

Participation Mechanisms

Public participation in the German political arena is an instrument almost exclusively geared to the reform of legislation. Whenever a new law is proposed or an existing one overhauled, an extensive consultation process involving all political forces is set in motion. In hearings on the proposed legislative text, the opinion of all interested parties, NGOs and commercial associations is recorded, and informal groups such as citizens action committees and even concerned individuals are heard. A hearing process is started not only in the case of federal laws, but also in the revision of important Länder legislation.

While hearings are a fundamental instrument of democracy, and utterly important for the optimisation of new legislation, they do not apply to decision-making outside the legal field. All decisions on the urban water and wastewater sectors are normally taken by municipal parliaments, and hardly any participative elements are in use here. On the contrary, the most important decisions on water and wastewater operations are prepared and discussed in the municipal parliaments' works committees which normally meet in confidentiality. It is thus not only a lack of participative mechanisms, but moreover a lack of public information that prevails under these conditions. Most people simply never find out about important changes to their water system until the decision is implemented.

An important exception are cases where a decision requires the preparation of an environmental impact assessment (EIA). In that case, public participation is actively invited and prescribed by law. However, there is only a handful of cases where an EIA is mandatory in the water sector. For instance, some proposals for the construction of drinking water reservoirs on rivers in East Germany attracted a lot of public opposition, and the use of EIA instruments was important to make

this critical voice heard. However, EIA plays no role in decision-making processes on the organisation or ownership of water and wastewater operators.

Overall, a certain lack of public participation occurs in the German democratic system when it comes to decision-making at the local level. To address this deficit, several Länder have recently introduced elements of direct democracy, particularly at the municipal level. By collecting a certain number of voters' signatures, an initiative can bring about an official plebiscite on a contentious issue. If a majority of voters support the plebiscite, this decision is legally equivalent to a decision taken by the municipal parliament, and hence binding for the mayor. In principle, most decisions normally taken by municipal parliaments can thus be directly influenced by the voters. One important exception is concerning issues with an influence on the municipal budget, but an exact definition is lacking of when the municipal budget is touched upon and when not.

The public has eagerly welcomed this new instrument of direct democracy, notably concerning municipal privatisation projects. In the water sector, proposals for cross-border leasing arrangements of water works or wastewater treatment plants received most opposition. In Hamburg, an initiative is challenging the mayor's plans to part-privatise the local public water operator. Meanwhile, there are German-wide efforts to coordinate the various local activities in the water sector.

The introduction of the new elements of direct democracy strengthens the role of environmental, development, anti-globalisation and consumer NGOs in urban decision-making. Trade unions as well are using plebiscites to stop contentious privatisation proposals. It is remarkable that in most cases of plebiscites, almost all parties in the parliament oppose the issue, but that a vast majority of their (former) voters is in favour. This may be an indication of how important a democratic element plebiscites actually are. Without this kind of public scrutiny and control mechanism, urban decision-making would be easier for those in power. However, decisions lacking participation tend to be less legitimate, and most likely, not as sustainable and quality of life-oriented as possible.

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12 Websites

Federal Ministries and Agencies

Environment Ministry www.bmu.de

Environment Agency www.uba.de

Health Ministry www.bmgs.de

Ministry of Consumer protection, food and agriculture www.verbraucherministerium.de

Water associations

Verband der deutschen Gas- und Wasserunternehmen BGW www.bgw.de

Verband der kommunalen Unternehmen VKU www.vku.de

Deutsche Vereinigung des Gas- und Wasserfachs DVGW www.dvgw.de

NGOs

Coalition of local water initiatives www.unser-aller-wasser.de

Coaliton critical of privatisation in the water sector www.unser-wasser.de

Arbeitskreis Wasser im BBU www.akwasser.de

Bund Umwelt und Naturschutz Deutschland www.bund.net

WWF www.wwf.de

Greenpeace www.greenpeace.de

Grüne Liga www.gruene-liga.de

Attac www.attac.de

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